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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/427,457	10/16/1999	GEOFF P. ANDERSEN	AFB00497	3207

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EXAMINER	
CHANG, AUDREY Y	
ART UNIT	**PAPER NUMBER**
2872	

DATE MAILED: 09/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/427,457	ANDERSEN, GEOFF P.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,12-26 and 29-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 12-26 and 29-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 4, 2005 has been entered.

2. This Office Action is also in response to applicant's amendment filed on July 14, 2005, which has been entered into the file.

3. By this amendment, the applicant has amended claims 1, 2, 19, and 21 has newly added claims 40 and 41.

4. Claims 1-8, 12-26, and 29-41 remain pending in this application.

Claim Objections

5. Claims 1-8, 12-26 and 29-41 are objected to because of the following informalities:

(1). Claims 1, 2, 15, 18, 19, 20, 21, 32, 37-39 and 40 recites the phrase "in a microscope" or "a microscope", a holographic image corrector and "an optical system having objective" yet there are no logical and structural relationships among the terms, in particularly, in relating to "microscope" which make the scopes very unclear and indefinite. The term "microscope" therefore can only be examined as intended use for the holographic recording device.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. **Claims 1, 2-8, 12-14, 15-17, 18, 19, 20, 21-26, 29-31, 32-35, 37, 38 and 39 and newly added claim 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Leith (PN. 3,580,655) in view of patent issued to Kallet (PN. 3,740,147).**

Leith teaches a *method* and *apparatus* for producing a *holographic phase plate*, serves as the *holographic image corrector*, for *correcting* aberrations and distortions caused by an *optical system,* wherein a collimated *laser light beam* generated by a *coherent light source* (201, Figure 27), serves as the first laser light beam, is send to illuminate the *optical system* (205), to form an *object beam* (215). The object beam then *intersects* and *interferes* with *a reference laser beam*, generated form the same coherent light source, in a *photographic plate* (213), serves as the *recording medium*, to record a hologram bearing the object information of the optical system. Leith teaches that after the holographic phase plate is developed, an object (219, Figure 28) intended to be viewed is placed at the object plane of the optical system wherein the light illuminates and reflects off the object will be passed through the optical system and the holographic phase plate to produce a *corrected* image of the object at off-axis position, (223, Figure 28). Leith teaches that the preferred coherent light source is laser light source, (please see column 2, lines 19-20).

This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the optical system is an objective or is an objective in a microscope. With regard to the

feature concerning the microscope having an objective and an imaging lens, it is known in the art that any *standard microscope* has objective and imaging lens as demonstrated by the teachings of **Kallet**, wherein an objective (34, Figure 1) and an imaging lens (5) are included, and the objective lens and the imaging lens **are spaced apart,** (with respect to claims 1, 2, 15, and 18-20). Since the method for correcting the aberrations of the *optical system* of Leith is **not restricted** to a particular optical system and Leith teaches particularly that **either a lens OR an optical system** is used as the optical component (205, please see column 19, lines 34-35), which is intended to be corrected this immediately suggests to one skilled in the art that the optical system (205) may include more than one lenses and which certainly may include an objective or an objective and/or an imaging lens in a microscope, for the benefit of apply the SAME holographic correction technique to correct the objective lens and imaging lens in a microscope. In Figure 29, Leith also **teaches** that in the object light path more than one lenses are included before the object beam reaches the photographic plate, which by the *same analogy* to the instant application, lenses elements 247 and 249, **could be identified as the objective lens and the imaging lens** spaced apart from each other and the object light passes BOTH elements to be recorded in as hologram, **(in particular referred to the amendment of claim 1)**. This therefore gives explicitly demonstration concerning the objective and imaging lens spaced apart from each other. .

The features concerning the holographic optical element being used in a microscope are also considered to be obvious modifications to one skilled in the art for it has been held that a recitation with respect to the manner in which a claimed apparatus *is intended to be employed does not* differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987). With regard to the feature concerning the "image correction in microscope" witch is stated in the *preamble*, it has been held that a *preamble* is denied the effect of a limitation wherein the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause.

Kropa v. Robie, 88 USPQ 478 (CCPA 1951). In this case the claims following the preamble each contains a self-contained description of the structure for making a hologram using an objective that does not depend on the "microscope" to be complete.

With regard to the feature concerning using a pinhole plate in front of the optical system, Leith in a different embodiment teaches explicitly to use a *pinhole* (239, Figure 29) in front of the optical system (249) intended to be corrected to record the optical system in a photographic plate (257) as a hologram. The pinhole is used in *both* the object beam path and in reference beam path, (please see Figure 29). It is implicitly true in light of Figure 28 of Leith, an object intended to be viewed by the optical system can be placed at the pinhole position which is the object plane of the optical system to replace the pinhole and the recording laser light (235) illuminates the object as the light retraces the object beam path in the recording phase will create a corrected image of the object at an off-axis reference beam path as shown in Figure 28. The principle of reproducing reference beam from object beam and reproducing object beam from reference of a hologram is the *essential properties* of a hologram. It would then have been obvious to one skilled in the art to apply the teachings of Leith in Figure 29 to use a pinhole in the object beam path as well as in the reference beam path to eliminate possible aberration from the light source as the light beam is being expanded and to make the light beam generated from a point light source so that it can more accurately reproduce a corrected image for the object intended to be viewed as it is placed at the pinhole or light focusing point of the pinhole.

With regard to the features concerning the optical system may also be a concave mirror and being tilted to an off-axis position, although these references do not teach such features explicitly however since concave mirror is a common type of optical system, which can be implicitly included in the "optical system" of Leith for making holographic phase plate to correct the aberration of the concave mirror. The specification also fails to teach the criticality of having this particular arrangement would overcome any problem in prior art such features are therefore being considered as obvious matter of design choices to

one skilled in the art for the benefit of making holographic phase plate to correct the aberration of the concave mirror.

With regard to the features concerning the sizes of the systems, these references do not teach such features explicitly however they are either inherently met by the arrangements of the cited references or an obvious modifications to one skilled in the art since a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

8. Claims 21-26, 29-31, 32-35, 37, 38 and 39 and newly added claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Leith (PN. 3,580,655) in view of patents issued to Kallet (PN. 3,740,147) and Klotz (PN. 3,742,555).

Leith teaches a *method* and *apparatus* for producing a *holographic phase plate*, serves as the *holographic image corrector*, for *correcting* aberrations and distortions caused by an *optical system,* wherein a collimated *laser light beam* generated by a *coherent light source* (201, Figure 27), serves as the first laser light beam, is send to illuminate the *optical system* (205), to form an *object beam* (215). The object beam then *intersects* and *interferes* with *a reference laser beam*, generated form the same coherent light source, in a *photographic plate* (213), serves as the *recording medium*, to record a hologram bearing the object information of the optical system. Leith teaches that after the holographic phase plate is developed, an object (219, Figure 28) intended to be viewed is placed at the object plane of the optical system wherein the light illuminates and reflects off the object will be passed through the optical system and the holographic phase plate to produce a *corrected* image of the object at off-axis position, (223, Figure 28). Leith teaches that the preferred coherent light source is laser light source, (please see column 2, lines 19-20).

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feature concerning the microscope having an objective and an imaging lens, it is known in the art that any standard microscope has objective and imaging lens as demonstrated by the teachings of **Kallet**, wherein an objective (34, Figure 1) and an imaging lens (5) are included, and the objective lens and the imaging lens **are spaced apart,** (with respect to claims 21, 32 and 37-39). Since the method for correcting the aberrations of the *optical system* of Leith is **not restricted** to a particular optical system and Leith teaches particularly that **either a lens OR an optical system** is used as component (205, please see column 19, lines 34-35), that is intended to be corrected this immediately suggests to one skilled in the art that the optical system (205) may include more than one lenses and which certainly may include an objective or an objective and/or an imaging lens in a microscope, for the benefit of apply the SAME holographic correction technique to correct the objective lens and imaging lens in a microscope. In Figure 29, Leith also teaches that in the object light path more than one lenses are included before the object beam reaches the photographic plate, which by the same analogy to the instant application, lenses elements 247 and 249, could be identified as the objective lens and the imaging lens spaced apart from each other and the object light passes BOTH elements. This therefore gives explicitly demonstration concerning the objective and imaging lens spaced apart from each other.

The features concerning the holographic optical element being used in a microscope are also considered to be obvious modifications to one skilled in the art for it has been held that a recitation with respect to the manner in which a claimed apparatus *is intended to be employed does not* differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987). With regard to the feature concerning the "image correction in microscope" witch is stated in the *preamble*, it has been held that a *preamble* is denied the effect of a limitation wherein the claim is drawn to a structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause. Kropa v. Robie, 88 USPQ 478 (CCPA 1951). In this case the claims following the preamble each

contains a self-contained description of the structure for making a hologram using an objective that does not depend on the "microscope" to be complete.

With regard to the feature concerning using a pinhole plate in front of the optical system, Leith in a different embodiment teaches explicitly to use a *pinhole* (239, Figure 29) in front of the optical system (249) intended to be corrected to record the optical system in a photographic plate (257) as a hologram. The pinhole is used in *both* the object beam path and in reference beam path, (please see Figure 29). It is implicitly true in light of Figure 28 of Leith, an object intended to be viewed by the optical system can be placed at the pinhole position which is the object plane of the optical system to replace the pinhole and the recording laser light (235) illuminates the object as the light retraces the object beam path in the recording phase will create a corrected image of the object at an off-axis reference beam path as shown in Figure 28. The principle of reproducing reference beam from object beam and reproducing object beam from reference of a hologram is the *essential properties* of a hologram. It would then have been obvious to one skilled in the art to apply the teachings of Leith in Figure 29 to use a pinhole in the object beam path as well as in the reference beam path to eliminate possible aberration from the light source as the light beam is being expanded and to make the light beam generated from a point light source so that it can more accurately reproduce a corrected image for the object intended to be viewed as it is placed at the pinhole or light focusing point of the pinhole. This reference however does not teach explicitly to use a *pinhole array* in the object light path. **Klotz** in the same field of endeavor teaches to use a pinhole array in the object light path to record hologram with high image quality, (please see Figure 1 columns 1-2). It would then have been obvious to one skilled in the art to use a pinhole array in the object light path for the benefit of enhancing the image quality of the recorded hologram.

With regard to the features concerning the optical system may also be a concave mirror and being tilted to an off-axis position, although these references do not teach such features explicitly however since concave mirror is a common type of optical system, which can be implicitly included in the "optical

system" of Leith for making holographic phase plate to correct the aberration of the concave mirror. The specification also fails to teach the criticality of having this particular arrangement would overcome any problem in prior art such features are therefore being considered as obvious matter of design choices to one skilled in the art for the benefit of making holographic phase plate to correct the aberration of the concave mirror.

With regard to the features concerning the sizes of the systems, these references do not teach such features explicitly however they are either inherently met by the arrangements of the cited references or an obvious modifications to one skilled in the art since a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

Allowable Subject Matter

9. The following is a statement of reasons for the indication of allowable subject matter: of the prior art references considered none has disclosed a method for image correction including recording an objective via a pinhole in a holographic medium holographically, replacing the pinhole by an article, illuminate the article through the hologram and at the same time recording the article with the reference light beam in the hologram as a superposed or contour inference pattern or hologram image, (as stated in claim 36).

Response to Arguments

10. Applicant's arguments filed April 4, 2005 have been fully considered but they are not persuasive.

11. In response to applicant's arguments concerning the illumination of the object by non-coherent light beam of the cited Leith reference, the applicant is respectfully noted that the claims **never** state the light for illuminating the object is coherent or non-coherent only claims to illuminate a "light beam" to generate the corrected hologram image which is exactly what the cited reference does in Figure 28. The

applicant being one skilled in the art must know that a hologram is best play back by the light have the same wavelength of the recorded beam, but no coherency is required, since a single beam will be able to play back the hologram, coherency generally required between two beams as for recording the hologram is not required for play back. Use certain light beam to play the hologram does not considered to be a novel step since the key is to play back the corrected hologram image which the cited Leith reference teaches explicitly.

12. The applicant is also respectfully noted that a "new use" for an old structure based on the known property of the old structure, namely in this case the hologram corrector, is anticipated by the old structure and not a base for patent, (please see MPEP 2112, 2113).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.